

scarcely rising above the gum. First lower premolar small, but larger than the first upper; second premolar considerably larger than the canine in cross section, and nearly equal to it in vertical extent; third again larger, but with a short external cusp; first molar less than the last premolar, about three fourths its size, flat-crowned; second molar much smaller, scarcely more than half its antero-posterior diameter, and level with the gum.

The skull presents no peculiarity; zygomatic arches well developed, postorbital processes of the frontals short and very acute at their extremities; no prominent sagittal ridge.

Length of an adult, head and body, 3·2 inches, tail 0·4, head 1·2, eye from tip of nostril 0·4, ear 0·55, forearm 2·3, thumb 0·8, second finger 1·45; third finger—metacarp. 1·55, 1st ph. 1·0, 2nd ph. 1·5; fifth finger—metacarp. 1·45, 1st ph. 0·75, 2nd ph. 0·75; tibia 1·0, calcaneum 0·2, foot 0·58.

Hab. Saráwak, Borneo.

The above description has been taken from one of four male specimens preserved in alcohol from the collection of Ward's Museum, Rochester, New York, U. S. A. All agree remarkably closely in measurements and in other respects.

It may be seen from the description that this species is very much smaller than the only other known species of the subgenus *Ptenochirus*, namely *C. Jagorii*, Ptrs., from the Philippine Islands, from which it differs also in the form of the extremity of the muzzle and in the relative position and size of the teeth.

The specimen from which I have taken the above description was kindly forwarded to me by Mr. Frederic A. Lucas, who had correctly recognized it as representing a hitherto undescribed species; and I have therefore much pleasure in connecting his name with it.

XXII.—*On Bats from Old Calabar*. By OLDFIELD THOMAS, F.Z.S., Assistant in the Zoological Department, British Museum.

THROUGH the kindness of Dr. J. A. Smith, of Edinburgh, the British Museum has recently received a small collection of Bats obtained at Old Calabar by Dr. A. Robb, of the United Presbyterian Mission at that place.

The collection consists of four specimens of *Epomophorus comptus*, All., concerning which Dr. Smith has himself pub-

lished a most valuable notice*, one specimen each of *Nycteris grandis*, Ptrs., *Vesperugo nanus*, Ptrs., a new species of *Vesperugo*, a new species of *Kerivoula*, and an immature specimen of a species allied to, or identical with, *Vesperugo Kuhlii*, Natt., but which is not in a condition to be certainly determined.

The following are descriptions of the new species above referred to:—

Vesperugo (Vesperus) brunneus.

Muzzle broad and flat above, the glandular prominences well developed increasing its width. Ears rather shorter than the head, laid forward they reach to about half-way between the eye and the tip of the nose; inner margin faintly convex, tip broadly rounded off; outer margin evenly convex, an angular emargination opposite the base of the tragus, basal lobe elongated.



Tragus of medium length, inner margin straight, tip obliquely truncated; outer margin also straight, nearly parallel with the inner; basal lobule small, triangular.

Wings from the base of the toes; postcalcaral lobe well developed; tail entirely contained in the interfemoral membrane.

Fur above and below dark brown.

Outer upper incisors minute, barely one third the height of the large unicuspidate, inner incisors, and about one fourth the size in cross section at the base; no trace of a first premolar. Lower incisors rather crowded, overlapping, at right angles to the direction of the jaw; second lower premolar about twice as long as the first, and about equal to the anterior cusp of the first molar.

Length (of the type, a female, preserved in alcohol)—head and body 1''·8, tail 1''·35, head 0''·6, ear 0''·55, tragus 0''·2, forearm 1''·33, third finger 2''·27, fifth finger 1''·6, tibia 0''·5, foot 0''·35.

Vesperugo brunneus appears to be most nearly allied to *V. capensis*, Sm.; but it differs from that species by its unicuspidate inner upper incisors, and also, as well as from all the other species of the subgenus, by its very peculiarly shaped tragus. The only species of the genus that have a tragus at

* Proc. Roy. Phys. Soc. April 1880, p. 362.

all like it are *V. vagans*, Dobs.*, and, in a much lesser degree, *V. maurus*, Blas.; but these species have a very different dentition, possessing a minute first upper premolar and other characters of the subgenus *Vesperugo*.

Kerivoula Smithii.

Ears of medium length, laid forward they extend about one tenth of an inch beyond the end of the muzzle; inner margin very strongly convex, its centre being over a point halfway between the eye and the tip of the nose; outer margin with a deep emargination just below the tip. Tragus slender, tapering, with a very small triangular lobule at the base, succeeded above by a shallow emargination, as shown in the woodcut; from the angle above this emargination the sides slope evenly to the tip, which is acutely pointed.

Fur, above and below, greyish brown, the tips of the hairs shining grey.



Wings to the base of the toes.

Distribution of fur much as in *K. lanosa*, Sm., with the exception of the marginal fringe to the interfemoral, of which there is no trace in this species.

Inner upper incisors long, with a distinct posterior secondary cusp at a point about two thirds of their height; the outer upper incisors just equal the secondary cusp of the inner incisors, and have also a distinct internal posterior secondary cusp, whose tip is about half as high as the main cusp; upper premolars bearing the usual proportions to each other, the third being the largest and the second the smallest, the first being just intermediate in size. First and second lower incisors trilobate, outer ones unicuspidate; lower premolars equal.

Length (of the type, an adult male, in spirit)—head and body 1".55, tail 1".7, head 0".58, ear 0".55, tragus 0".3, forearm 1".3, thumb 0".27, third finger 2".7, fifth finger 1".9, tibia 0".55, foot 0".25.

This species belongs to Dr. Dobson's second section of the genus†, characterized by the presence of a basal lobe to the tragus; this lobe, however, is very small as compared with that of the other species of the section.

In addition to the characters of the tragus, which might

* Ann. & Mag. Nat. Hist. 1879, iv. p. 135.

† Cat. Chir. B. M. p. 332.

easily be overlooked in a dried specimen, *K. Smithii* differs from *K. brunnea* and *K. lanosa* by the absence of an inter-femoral fringe, from *K. africana* by the presence of a secondary cusp on the outer upper incisors, and from *K. aërosa* by the comparatively large size of the same tooth. All the other species hitherto described are from the Oriental Region.

I propose to name this species after the donor of this most acceptable addition to the national collection of Chiroptera.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

April 14, 1880.—Robert Etheridge, Esq., F.R.S.,
President, in the Chair.

The following communications were read:—

1. "On a new Theriodont Reptile (*Clorhizodon orenburgensis*, Twelvtr.) from the Upper Permian Sandstone of Kargalinsk, near Orenburg, in South-eastern Russia." By W. H. Twelvetrees, Esq., F.L.S., F.G.S.

The above measures are cupriferous, and rest on limestone with Zechstein fossils. Associated with the remains of Saurians and Labyrinthodonts are *Calamites*, *Lepidodendron*, *Aroides crassispata*, Conifers, and a *Unio*. The specimen noticed in this paper is apparently the dentary part of the left mandibular ramus, with the crowns of a canine, an incisor, and ten of the molars. The author describes the characteristics of these and the mode of implantation in the jaw, which accords with that described by Prof. Owen in *Titanosuchus ferox*. The characters of this specimen resemble those of the genus *Rhopalodon*; but as there are some marked differences, the author proposes to name it *Clorhizodon orenburgensis*.

2. "The Classification of the Tertiary Period by means of the Mammalia." By Prof. W. Boyd Dawkins, M.A., F.R.S., F.G.S., Professor of Geology in Owens College.

The author, after some introductory remarks on the value of Vertebrata and Invertebrata in classification, pointed out that the Mammalia become of especial value in the Tertiary period, undergoing more rapid change than the other classes, from their being, as it is happily termed, *en pleine évolution*. He discussed the characteristics of each of the great periods, as defined and limited by their Mammalia, pointing out that throughout the Eocene these frequently exhibit relations more or less marsupial. Indeed it is not till the close of the Lower Miocene that the traces of this relationship are lost. In the Middle Miocene *Sus*, *Cervus*, *Antelope*, *Felis*, *Lutra*, and *Castor* appear for the first time, and the higher Apes were present in European forests. In the Upper Miocene